1

SEQUENCE LISTING

<110> SLINGSBY, JASON
      KINGSMAN, SUSAN
      ROHL, JONATHAN
      SLADE, ANDREW

<120> PRODUCER CELL FOR THE PRODUCTION OF RETROVIRAL VECTORS

<130> 078883-0146

<140> 10/088,076
<141> 2002-03-20

<150> PCT/GB00/03837
<151> 2000-10-05

<150> GB 9923558.2
<151> 1999-10-05

<160> 65

<170> PatentIn Ver. 2.1

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<220>
<223> Description of Artificial Sequence: Primer

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<220>
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<210> 11
<211> 56
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

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<210> 12
<211> 57
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 12
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<210> 13
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<212> DNA
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<220>
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7

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<210> 14
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<212> DNA
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<210> 15
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<213> Artificial Sequence

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<400> 15
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<210> 16
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<212> DNA
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<223> Description of Artificial Sequence: Primer

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<400> 17
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<210> 18
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<212> DNA
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<223> Description of Artificial Sequence: Primer

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<210> 19
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<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

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<210> 20
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<223> Description of Artificial Sequence: Synthetic
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ggtgttcctg gccagaacac aggaggacag gtaagattgg gagacccttt gacattggag   180
caaggcgctc aagaagttag agaaggtgac ggtacaaggg tctcagaaat taactactgg   240
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<220>
<223> Description of Artificial Sequence: Synthetic
      oligonucleotide

9

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<210> 22
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<220>
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<210> 23
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<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
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<210> 24
<211> 43
<212> DNA
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<220>
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<210> 26
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<210> 27
<211> 29
<212> DNA
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<220>
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<210> 28
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<212> DNA
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<400> 28
tgatgcccgg gcggccgagg cggcctact                                29


<210> 29
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<220>
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<210> 30
<211> 32
<212> DNA
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<220>
<223> Description of Artificial Sequence: Primer
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<400> 30
tgcgtagcta gcctcccggt ggtgggtcgg tg   32

<210> 31
<211> 32
<212> DNA
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<220>
<223> Description of Artificial Sequence: Primer

<400> 31
agcagtagat ctggggttgg ggttgcgcct tt   32

<210> 32
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<223> Description of Artificial Sequence: Primer

<400> 32
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<210> 33
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<400> 33
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<210> 34
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<220>
<223> Description of Artificial Sequence: Primer

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<210> 35
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<210> 37
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<400> 37
gatggtagat ctgcgcagca ccatggcctg aa                                       32


<210> 38
<211> 34
<212> DNA
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<220>
<223> Description of Artificial Sequence: Primer

<400> 38
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<210> 39
<211> 515
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gggggaccag tggtgccgcg tgctgagaca gtccctgccc gaggagaaga ttcctagcca     180
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13

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gagaattagg ggcgtgcaac aagccgctaa agagctggga gaggtgaatc gcggcatctg        360
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<210> 41
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<400> 41
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<210> 42
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<400> 42
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<210> 43
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<400> 43
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<210> 44
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<220>
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<223> The sequence of the EIAV gag/pol ORF is inserted
      between these bases

<400> 44
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<210> 45
<211> 10384
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15

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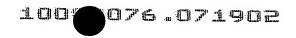      oligonucleotide

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26

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28

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29

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35

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36

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cccaactgat cttcagcatc ttttactttc accagcgttt ctgggtgagc aaaaacagga    5820
aggcaaaatg ccgcaaaaaa gggaataagg gcgacacgga aatgttgaat actcatactc    5880
ttccttttttc aatattattg aagcatttat cagggttatt gtctcatgag cggatacata    5940
tttgaatgta tttagaaaaa taaacaaata ggggttccgc gcacatttcc ccgaaaagtg    6000
ccacctgacg tctaagaaac cattattatc atgacattaa cctataaaaa taggcgtatc    6060
acgaggccct ttcgtctcgc gcgtttcggt gatgacggtg aaaacctctg acacatgcag    6120
ctccccggaga cggtcacagc ttgtctgtaa gcggatgccg ggagcagaca gcccgtcag    6180
ggcgcgtcag cgggtgttgg cgggtgtcgg ggctggctta actatgcggc atcagagcag    6240
attgtactga gagtgcacca tatggacata ttgtcgttag aacgcggcta caattaatac    6300
ataaccttat gtatcataca catacgattt aggtgacact atagaactcg actctagagt    6360
ccgttacata acttacggta aatggcccgc ctggctgacc gcccaacgac ccccgcccat    6420
tgacgtcaat aatgacgtat gttcccatag taacgccaat agggactttc cattgacgtc    6480
aatgggtgga gtatttacgg taaactgccc acttggcagt acatcaagtg tatcatatgc    6540
caagtacgcc ccctattgac gtcaatgacg gtaaatggcc cgcctggcat tatgcccagt    6600
acatgacctt atgggacttt cctacttggc agtacatcta cgtattagtc atcgctatta    6660
ccatggtgat gcggttttgg cagtacatca atgggcgtgg atagcggttt gactcacggg    6720
gatttccaag tctccacccc attgacgtca atgggagttt gttttggcac caaaatcaac    6780
gggactttcc aaaatgtcgt aacaactccg ccccattgac gcaaatgggc ggtaggcgtg    6840
tacggtggga ggtctatata agcagagctc gtttagtgaa ccgcgccagt cttccgatag    6900
actgcgtcgc ccgggtaccc gtattcccaa taaagcctct tgctgtttgc atccgaatcg    6960
tggtctcgct gttccttggg agggtctcct ctgagtgatt gactacccac gacgggggtc    7020
```

50

```
tttcatttgg gggctcgtcc gggatttgga gacccctgcc cagggaccac cgacccacca    7080
ccgggaggta agctggccag caacttatct gtgtctgtcc gattgtctag tgtctatgtt    7140
tgatgttatg cgcctgcgtc tgtactagtt agctaactag ctctgtatct ggcggacccg    7200
tggtggaact gacgagttct gaacacccgg ccgcaaccct gggagacgtc ccagggactt    7260
tgggggccgt ttttgtggcc cgacctgagg aagggagtcg atgtggaatc cgaccccgtc    7320
aggatatgtg gttctggtag gagacgagaa cctaaaacag ttcccgcctc cgtctgaatt    7380
tttgctttcg gtttggaacc gaagccgcgc gtcttgtctg ctgcagcgct gcagcatcgt    7440
tctgtgttgt ctctgtctga ctgtgtttct gtatttgtct gaaaattagg gccagactgt    7500
taccactccc ttaagtttga ccttaggtca ctggaaagat gtcgagcgga tcgctcacaa    7560
ccagtcggta gatgtcaaga agagacgttg g                                   7591
```

<210> 58
<211> 2870
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
      oligonucleotide

<400> 58
```
gctagcataa cttcgtataa tgtatgctat acgaagttat tctagagaac catcagatgt      60
ttccagggtg ccccaaggac ctgaaatgac cctgtgcctt atttgaacta accaatcagt     120
tcgcttctcg cttctgttcg cgcgcttctg ctccccgagc tcaataaaag agcccacaac     180
ccctcactcg gggcgccagt cctccgattg actgagtcgc ccgggtaccc gtgtatccaa     240
taaaccctct tgcagttgca tccgacttgt ggtctcgctg ttccttggga gggtctcctc     300
tgagtgattg actacccgtc agcggggggtc tttcatttgg gggctcgtcc gggatcggga     360
gacccctgcc cagggaccac cgacccacca ccgggaggta agctggctgc ctcgcgcgtt     420
tcggtgatga cggtgaaaac ctctgacaca tgcagctccc ggagacggtc acagcttgtc     480
tgtaagcgga tgccgggagc agacaagccc gtcagggcgc gtcagcgggt gttggcgggt     540
gtcggggcgc agccatgacc cagtcacgta gcgatagcgg agtgtatact ggcttaacta     600
tgcggcatca gagcagattg tactgagagt gcaccatatg cggtgtgaaa taccgcacag     660
atgcgtaagg agaaaatacc gcatcaggcg ctcttccgct tcctcgctca ctgactcgct     720
gcgctcggtc gttcggctgc ggcgagcggt atcagctcac tcaaaggcgg taatacggtt     780
atccacagaa tcaggggata acgcaggaaa gaacatgtga gcaaaaggcc agcaaaaggc     840
caggaaccgt aaaaaggccg cgttgctggc gtttttccat aggctccgcc cccctgacga     900
gcatcacaaa aatcgacgct caagtcagag gtggcgaaac ccgacaggac tataaagata     960
ccaggcgttt cccccctggaa gctccctcgt gcgctctcct gttccgaccc tgccgcttac    1020
cggatacctg tccgcctttc tcccttcggg aagcgtggcg ctttctcata gctcacgctg    1080
taggtatctc agttcggtgt aggtcgttcg ctccaagctg ggctgtgtgc acgaacccccc    1140
cgttcagccc gaccgctgcg ccttatccgg taactatcgt cttgagtcca acccggtaag    1200
acacgactta tcgccactgg cagcagccac tggtaacagg attagcagag cgaggtatgt    1260
aggcggtgct acagagttct tgaagtggtg gcctaactac ggctacacta gaaggacagt    1320
atttggtatc tgcgctctgc tgaagccagt taccttcgga aaaagagttg gtagctcttg    1380
atccggcaaa caaaccaccg ctggtagcgg tggtttttttt gtttgcaagc agcagattac    1440
gcgcagaaaa aaaggatctc aagaagatcc tttgatcttt tctacggggt ctgacgctca    1500
gtggaacgaa aactcacgtt aagggatttt ggtcatgaga ttatcaaaaa ggatcttcac    1560
ctagatcctt ttaaattaaa aatgaagttt taaatcaatc taaagtatat atgagtaaac    1620
ttggtctgac agttaccaat gcttaatcag tgaggcacct atctcagcga tctgtctatt    1680
tcgttcatcc atagttgcct gactccccgt cgtgtagata actacgatac gggagggctt    1740
accatctggc cccagtgctg caatgatacc gcgagaccca cgctcaccgg ctccagattt    1800
atcagcaata aaccagccag ccggaagggc cgagcgcaga agtggtcctg caactttatc    1860
cgcctccatc cagtctatta attgttgccg ggaagctaga gtaagtagtt cgccagttaa    1920
tagtttgcgc aacgttgttg ccattgctgc aggcatcgtg gtgtcacgct cgtcgtttgg    1980
tatggcttca ttcagctccg gttcccaacg atcaaggcga gttacatgat ccccccatgtt    2040
gtgcaaaaaa gcggttagct ccttcggtcc tccgatcgtt gtcagaagta agttggccgc    2100
agtgttatca ctcatggtta tggcagcact gcataattct cttactgtca tgccatccgt    2160
```

```
aagatgcttt tctgtgactg gtgagtactc aaccaagtca ttctgagaat agtgtatgcg    2220
gcgaccgagt tgctcttgcc cggcgtcaac acgggataat accgcgccac atagcagaac    2280
tttaaaagtg ctcatcattg gaaaacgttc ttcggggcga aaactctcaa ggatcttacc    2340
gctgttgaga tccagttcga tgtaacccac tcgtgcaccc aactgatctt cagcatcttt    2400
tactttcacc agcgtttctg ggtgagcaaa aacaggaagg caaaatgccg caaaaaaggg    2460
aataagggcg acacggaaat gttgaatact catactcttc cttttttcaat attattgaag    2520
catttatcag ggttattgtc tcatgagcgg atacatattt gaatgtattt agaaaaataa    2580
acaaataggg gttccgcgca catttccccg aaaagtgcca cctgacgtct aagaaaccat    2640
tattatcatg acattaacct ataaaaatag gcgtatcacg aggcccttc gtcttcaaga    2700
attcatacca gatcaccgaa aactgtcctc caaatgtgtc cccctcacac tcccaaattc    2760
gcgggcttct gcctcttaga ccactctacc ctattcccca cactcaccgg agccaaagcc    2820
gcggcccttc cgtttctttg cttttgaaag accccacccg taggtggcaa    2870
```

<210> 59
<211> 3097
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
      oligonucleotide

<400> 59

```
gctagcttaa gtaacgccat tttgcaaggc atggaaaaat acataactga gaatagagaa      60
gttcagatca aggtcaggaa cagatggaac agctgaatat gggccaaaca ggatatctgt     120
ggtaagcagt tcctgccccg gctcagggcc aagaacagat ggaacagctg aatatgggcc     180
aaacaggata tctgtggtaa gcagttcctg ccccggctca gggccaagaa cagatggtcc     240
ccagatgcgg tccagccctc agcagtttct agagaaccat cagatgtttc cagggtgccc     300
caaggacctg aaatgaccct gtgccttatt tgaactaacc aatcagttcg cttctcgctt     360
ctgttcgcgc gcttctgctc cccgagctca ataaagagc ccacaacccc tcactcgggg     420
cgccagtcct ccgattgact gagtcgcccg ggtacccgtg tatccaataa accctcttgc     480
agttgcatcc gacttgtggt ctcgctgttc cttgggaggg tctcctctga gtgattgact     540
acccgtcagc gggggtcttt catttggggg ctcgtccggg atcgggagac ccctgcccag     600
ggaccaccga cccaccaccg ggaggtaagc tggctgcctc gcgcgtttcg gtgatgacgg     660
tgaaaacctc tgacacatgc agctcccgga gacggtcaca gcttgtctgt aagcggatgc     720
cgggagcaga caagcccgtc agggcgcgtc agcgggtgtt ggcgggtgtc ggggcgcagc     780
catgacccag tcacgtagcg atagcggagt gtatactggc ttaactatgc ggcatcagag     840
cagattgtac tgagagtgca ccatatgcgg tgtgaaatac cgcacagatg cgtaaggaga     900
aaataccgca tcaggcgctc ttccgcttcc tcgctcactg actcgctgcg ctcggtcgtt     960
cggctgcggc gagcggtatc agctcactca aaggcggtaa tacggttatc cacagaatca    1020
ggggataacg caggaaagaa catgtgagca aaaggccagc aaaaggccag gaaccgtaaa    1080
aaggccgcgt tgctggcgtt tttccatagg ctccgccccc ctgacgagca tcacaaaaat    1140
cgacgctcaa gtcagaggtg gcgaaacccg acaggactat aaagatacca ggcgtttccc    1200
cctggaagct ccctcgtgcg ctctcctgtt ccgaccctgc cgcttaccgg atacctgtcc    1260
gcctttctcc cttcgggaag cgtggcgctt tctcatagct cacgctgtag gtatctcagt    1320
tcggtgtagg tcgttcgctc caagctgggc tgtgtgcacg aaccccccgt tcagcccgac    1380
cgctgcgcct tatccggtaa ctatcgtctt gagtccaacc cggtaagaca cgacttatcg    1440
ccactggcag cagccactgg taacaggatt agcagagcga ggtatgtagg cggtgctaca    1500
gagttcttga agtggtggcc taactacggc tacactagaa ggacagtatt tggtatctgc    1560
gctctgctga agccagttac cttcggaaaa agagttggta gctcttgatc cggcaaacaa    1620
accaccgctg gtagcggtgg ttttttttgtt tgcaagcagc agattacgcg cagaaaaaaa    1680
ggatctcaag aagatccttt gatctttttct acggggtctg acgctcagtg gaacgaaaac    1740
tcacgttaag ggattttggt catgagatta tcaaaaagga tcttcaccta gatccttta    1800
aattaaaaat gaagtttta atcaatctaa agtatatatg agtaaacttg gtctgacagt    1860
taccaatgct taatcagtga ggcacctatc tcagcgatct gtctatttcg ttcatccata    1920
gttgcctgac tccccgtcgt gtagataact acgatacggg agggcttacc atctggcccc    1980
agtgctgcaa tgataccgcg agacccacgc tcaccggctc cagatttatc agcaataaac    2040
```

```
cagccagccg gaagggccga gcgcagaagt ggtcctgcaa ctttatccgc ctccatccag    2100
tctattaatt gttgccggga agctagagta agtagttcgc cagttaatag tttgcgcaac    2160
gttgttgcca ttgctgcagg catcgtggtg tcacgctcgt cgtttggtat ggcttcattc    2220
agctccggtt cccaacgatc aaggcgagtt acatgatccc ccatgttgtg caaaaaagcg    2280
gttagctcct tcggtcctcc gatcgttgtc agaagtaagt tggccgcagt gttatcactc    2340
atggttatgg cagcactgca taattctctt actgtcatgc catccgtaag atgcttttct    2400
gtgactggtg agtactcaac caagtcattc tgagaatagt gtatgcggcg accgagttgc    2460
tcttgcccgg cgtcaacacg ggataatacc gcgccacata gcagaacttt aaaagtgctc    2520
atcattggaa aacgttcttc ggggcgaaaa ctctcaagga tcttaccgct gttgagatcc    2580
agttcgatgt aacccactcg tgcacccaac tgatcttcag catctttac tttcaccagc     2640
gtttctgggt gagcaaaaac aggaaggcaa aatgccgcaa aaaagggaat aagggcgaca    2700
cggaaatgtt gaatactcat actcttcctt tttcaatatt attgaagcat ttatcagggt    2760
tattgtctca tgagcggata catatttgaa tgtatttaga aaaataaaca aataggggtt    2820
ccgcgcacat ttccccgaaa agtgccacct gacgtctaag aaaccattat tatcatgaca    2880
ttaacctata aaaataggcg tatcacgagg ccctttcgtc ttcaagaatt cataccagat    2940
caccgaaaac tgtcctccaa atgtgtcccc ctcacactcc caaattcgcg ggcttctgcc    3000
tcttagacca ctctacccta ttccccacac tcaccggagc caaagccgcg gcccttccgt    3060
ttctttgctt ttgaaagacc ccacccgtag gtggcaa                             3097
```


<210> 60
<211> 42
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 60
```
ggctagagaa ttccaggtaa gatgggcgat cccctcacct gg                          42
```


<210> 61
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 61
```
ttgggtactc ctcgctaggt tc                                                22
```


<210> 62
<211> 8
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
      oligonucleotide

<400> 62
```
caggtaag                                                                 8
```

<210> 63
<211> 512
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
      oligonucleotide

<400> 63

```
cgcccgaaca gggacctgag aggggcgcag accctacctg ttgaacctgg ctgatcgtag        60
gatccccggg acagcagagg agaacttaca gaagtcttct ggaggtgttc ctggccagaa       120
cacaggagga caggtaagat gggagaccct ttgacatgga gcaaggcgct caagaagtta       180
gagaaggtga cggtacaagg gtctcagaaa ttaactactg gtaactgtaa ttgggcgcta       240
agtctagtag acttatttca tgataccaac tttgtaaaag aaaaggactg gcagctgagg       300
gatgtcattc cattgctgga agatgtaact cagacgctgt caggacaaga aagagaggcc       360
tttgaaagaa catggtgggc aatttctgct gtaaagatgg gcctccagat taataatgta       420
gtagatggaa aggcatcatt ccagctccta agagcgaaat atgaaaagaa gactgctaat       480
aaaaagcagt ctgagccctc tgaagaatat ct                                    512
```

<210> 64
<211> 514
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
      oligonucleotide

<400> 64

```
cgcccgaaca gggacctgag aggggcgcag accctacctg ttgaacctgg ctgatcgtag        60
gatccccggg acagcagagg agaacttaca gaagtcttct ggaggtgttc ctggccagaa       120
cacaggagga caggtaagat tgggagaccc tttgacattg gagcaaggcg ctcaagaagt       180
tagagaaggt gacggtacaa gggtctcaga aattaactac tggtaactgt aattgggcgc       240
taagtctagt agacttattt catgatacca actttgtaaa agaaaaggac tggcagctga       300
gggatgtcat tccattgctg gaagatgtaa ctcagacgct gtcaggacaa gaaagagagg       360
cctttgaaag aacatggtgg gcaatttctg ctgtaaagat gggcctccag attaataatg       420
tagtagatgg aaaggcatca ttccagctcc taagagcgaa atatgaaaag aagactgcta       480
ataaaaagca gtctgagccc tctgaagaat atct                                  514
```

<210> 65
<211> 522
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
      oligonucleotide

<400> 65

```
cgcccgaaca gggacctgag aggggcgcag accctacctg ttgaacctgg ctgatcgtag        60
gatccccggg acagcagagg agaacttaca gaagtcttct ggaggtgttc ctggccagaa       120
cacaggagga caggtaagat tgggagaccc tttgacattg gagcaaggcg ctcaagaagt       180
tagagaaggt gacggtacaa gggtctcaga aattaactac tggtaactgt aattgggcgc       240
taagtctagt agacttattt cattgatacc aactttgtaa aagaaaagga ctggcagctg       300
agggattgtc attccattgc tggaagattg taactcagac gctgtcagga caagaaagag       360
```

54

```
aggcctttga aagaacattg gtgggcaatt tctgctgtaa agattgggcc tccagattaa    420
taattgtagt agattggaaa ggcatcattc cagctcctaa gagcgaaata ttgaaaagaa    480
gactgctaat aaaaagcagt ctgagccctc tgaagaatat ct                      522
```